REMARKS

Claim 1 has been amended by incorporation of the limitation of claims 16 and 17, now cancelled. Claim 1 has been further amended to specify that the circumferential surfaces are wetted 360 degrees around. Note that the annular nozzle 36 is shown in FIG.2 as having nozzles 38 arranged 360 degrees around. Also, see page 12, lines 20-29 and page 14, lines 21-27.

The specification is amended responsive to paragraph 2 of the office action.

The rejection of claims 18-22 under the first paragraph of 35 USC 112 (paragraph 3 of the office action) is respectfully traversed. Applicant's invention as defined in claim 1 is directed to an improvement of the hybrid-type dust collector comprising a wet-type dust collector unit and a dry-type dust collector unit. As described in the specification at page 1, lines 24-28, the dry-type dust collector includes a filter for removing dust and particles by filtration. Thus, the dust collector, as described in applicant's specification is necessarily a dry-type filter.

The rejection of claims 1, 2, 6, 9 and 17 for obviousness over Wisting in view of Pircon (paragraph 4 of the office action) is believed to be moot in view of the amendment of claim 1 to include the limitations of claim 16.

The rejection of claims 13, 14 and 16 for obviousness over Wisting in view of Pircon, further in view of Johnson et al (paragraph 5 of the office action) is respectfully traversed. According to the Examiner, if the separate water and air inlets of Pircon were to be substituted for the water spray "into the incoming air system through nozzles 40" in Wisting (column 4, lines 1-3) and further modified by substituting plural nozzles for the single spray 56(55) of Pircon (see the first full paragraph at page 7 of the office action), the result would be the invention as defined by claim 1. It is respectfully submitted that the Examiner's conclusion is erroneous for several reasons. Firstly,

hypothetical modification would need further modification to have plural nozzles facing in each of opposite directions in order to wet both cylindrical surfaces as recited by claim 1. Secondly, a second wetted cylindrical surface could not be an "impingement surface" within the meaning of Pircon because the air inlet nozzle 46 cannot simultaneously impinge on two opposing surfaces. Pircon requires an impinging relationship between the nozzle and a wetted surface that is not adaptable to a cyclone, such as that of Wisting, wherein the air is introduced tangential to the cylindrical surface. In other words, the Examiner's hypothetical would borrow only one aspect of that impinging relationship, i.e. the vertical spacing between air and water outlets, and use it in a manner where there would be no impingement surface within the meaning of Pircon.

As the Examiner notes, Johnson et al teach filters for mist removal. There is no mist removal in applicant's filter. Further, Johnson et al do not supplement the basic reference combination in that the modified combination would still lack the spray means as defined by amended claim 1.

In the embodiment shown in Figure 3 of Pircon, the spray 56 is directed obliquely downwardly so that a part of the sprayed water will pass across the impingement area located opposite the nozzle 46. As a result, the gas stream issuing from the nozzle 46 at such a high velocity will break up the water spray into a mist which, in turn, will be entrained in the gas stream. The result of this would be that the sub-micron filter would be wetted and thereby clogged by the entrained mist and water droplets, if such a filter were to be provided downstream of the scrubber of the system of Wisting. In contrast, in applicant's invention as defined by the amended claim 1, the spray means for forming a water film sprays water horizontally and the air inlet is spaced downwardly from the spray means so that substantially the entire amount of sprayed water is consumed in the formation of water films, without formation of a mist. Accordingly, applicant's invention advantageously prevents the submicron filter from being wetted and clogged with mist or water droplets. As a result, an increase in the air-flow

resistance and pressure drop across the submicron filter is obviated (applicant's specification, page 6, lines 5-14).

The embodiment shown in Figure 4 of the Pircon reference also suffers from the same problem as that mentioned above in connection with reference to the embodiment of Figure 3, because the effluent and the water are subjected to a vigorous scrubbing within the vessel and the impingement takes place on the surface of the water droplets entrained in the gas stream (see column 6, lines 25-34). Furthermore, in the embodiment shown in Figure 4 of Pircon, the water is introduced tangentially to the cyclonic scrubber, so that only that portion of the circumferential inner surface of the scrubber which is located opposite the spray nozzle will be wetted. Accordingly, the particulate material adhered to the inner surface of the cyclonic scrubber would not be washed down around the entire circumference so that the removal of the particulate material would be imperfect. In contrast, according to applicant's invention as defined in amended claim 1, the annular spray means functions to wet substantially 360 degrees around the inner circumferential surface of the main body and the outer circumferential surface of the partition wall, whereby capture and wash down of the dust and particles takes place 360 degrees around.

Finally, the Examiner apparently overlooked applicant's argument, in the previous response filed July 21, 2008, that the moisture extractor 76 of Wisting is not a submicron filter within the meaning of the applicant's invention. Therefore, the Examiner is respectfully asked to reconsider that argument at page 8, line 23 to page 9, line 2 of applicant's previous response.

The rejection of paragraph 6 of the office action is traversed for the reasons given above. The additional citation Labadie in no way cure the deficiencies of the basic combination of Wisting, Pircon and Johnson et al as explained above.

In conclusion, it is respectfully requested that the Examiner reconsider the rejections of record in light of the present amendments and foregoing comments.

Respectfully submitted,
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